



Munich Personal RePEc Archive

Mental Accounting and Remittances: A Study of Malawian Households

Simon Davies and Joshy Easaw and Atanu Ghoshray

University of Bath, UK

October 2006

Online at <http://mpra.ub.uni-muenchen.de/3603/>

MPRA Paper No. 3603, posted 18. June 2007

Mental Accounting and Remittances: A Study of Malawian Households

Simon Davies¹, Joshy Easaw and Atanu Ghoshray
*Department of Economics and International Development,
University of Bath, Bath,
BA2 7AY, United Kingdom*

14 November 2006

Acknowledgements: We would like to thank the Malawian National Statistical Office for kindly providing us with the data. An earlier version of the paper was presented at a seminar in Chancellor College, University of Malawi, Zomba, September 2006. We acknowledge gratefully the useful comments and suggestions made by the participants.

¹ Corresponding author: Simon Davies: sd245@bath.ac.uk

Mental Accounting and Remittances: A Study of Malawian Households

Abstract

In this paper we use a behavioural approach to studying household consumption behaviour in Malawi. In particular we are interested to know whether households use mental accounting when consuming different categories of good. It is useful for assessing the impact of remittances on household consumption behaviour. We use 1998 cross-sectional data to find the following key results: (i) mental accounting systems are in operation. Remittance income exhibits a high marginal propensity to save, (ii) household income influences consumption habits, (iii) receipt of remittance income impacts on saving and spending habits. This is in line with the theory of remittances and corresponding mental accounting theory, and, finally, (iv) both remittances and loans are used for consumption smoothing and investment purposes.

JEL Classification Codes: D1; D12; O15

Keywords: Remittances; Household Behaviour; Consumer Economics; Economic Development; Africa; Malawi

1. Introduction

Remittances are commonplace in Malawi with over 20% of households receiving an average of 43% of their total non-business income from this source². It reflects the importance of such transfers for developing countries in general (Ratha, 2003; Gammeltoft, 2002) for which studies have shown that households do not use remittances in the same way as other income sources (Adams, 1991, 2005). The simple receipt of remittances may also be capable of modifying households' consumption choices (Cox Edwards and Ureta, 2003).

Given that remittances alter household expenditure, studies seek to test and measure the impact of these transfers on household consumption choices. Despite the fact that this is in conflict with economic theory of consumption such as the lifecycle-permanent income hypothesis (LC-PIH). A notable exception is found in Adams (2002) who shows that households exhibit a higher marginal propensity to save out of more risky income sources.

We propose an alternative explanation for the observed differences in marginal propensities to consume out of remittance income compared to other income sources; that of mental accounting. Under this theory, derived from Shefrin and Thaler (1988), households keep different financial accounts (real or metaphorical) out of which different goods are consumed. Income is placed in one account or "pot" or another depending partly upon its source, allowing us to observe different marginal propensities to consume different goods out of each income source.

Remittances lend themselves to an analysis in the mental accounting framework. In some cases they come with conditions attached ("use this money to educate my little brother"), in other cases they are used as a form of income pooling, mutually reducing risk and helping to smooth consumption³ potentially altering consumption behaviour. Remittances may thus be used for or encourage investment in "useful" areas such as education, health, nutrition and savings, or may be seen as "manna from heaven" and encourage non-productive behaviour (Kozel and Alderman, 1990 in Chami *et al.*, 2005).

This is the first time that the mental accounting hypothesis has been tested qualitatively for a developing economy. Mental accounting is important for government policy as well as for NGOs and banks trying to mobilise savings and encourage borrowing. If lack of consumption out of illiquid assets is a choice and not forced upon individuals, microfinance institutions need not only to provide liquidity, but also change consumption and savings behaviour. It is important to understand whether remittances are combined with other sources of income or spent in a particular way. If they are used for different

² Authors' calculations using Malawian Integrated Household Survey (1998). Chipeta and Kachaka (2005) calculate that remittances accounted for 6.3% of total daily per capita consumption in Malawi in 1998. Thus, even including business expenditure, this flow of income represents an important flow of income for Malawian households.

³ See Alderman and Paxson (1992) for a synthesis of the literature on risk and consumption in developing countries.

purposes to money from other sources, do these purposes tend to be constructive (such as education) or destructive (conspicuous consumption)?

This paper seeks to answer a couple of questions: Do households' spending choices conform to traditional consumption models in which source of income plays no role, or do households keep "mental accounts" consuming differently out of different money pots? What is the role of remittances in consumption and savings choices?

Levin (1998) uses American longitudinal data to find marginal propensities to consume (MPC) for different categories of goods out of different assets. He finds that the MPC out of current income is around 0.42 with a MPC out of changes in housing value of zero. This is a common empirical result which is seen as an anomaly of the lifecycle consumption model. Credit market constraints are often cited as an explanation⁴, but Levin suggests that individuals are not credit constrained but rather *choose* not to consume out of these assets. He uses testable differences between the models which allow him to discriminate between lifecycle consumption models with liquidity constraints and behavioural models of consumption, finding in favour of the latter. Furthermore households use different wealth categories to purchase different goods; for example, they are more likely to use liquid wealth such as savings than current income to pay for occasional purchases such as vacations. Although Levin's findings support the fact that individuals choose and are not forced to consume differently out of assets with different levels of "temptation", he does not break down current income into different categories. Thus, he is unable to test whether equally liquid income is used for different purposes.

Adams (2002) uses panel data from a sample of 469 rural Pakistani households to measure marginal propensities to save and consume out of income from different sources. He finds that the marginal propensity to save out of remittances is higher (at 0.711 for external remittances and 0.589 for internal remittances) than that for any other source of income. Although he notes that these results do not conform to unmodified lifecycle consumption models, Adams suggests that is due to income volatility and risk aversion, noting that income sources with greater variability exhibit greater marginal propensities to save. While Adams is able to distinguish between different MPC (or save) out of sources of equally liquid income, he does not look at how this income might be spent.

This paper combines these two approaches, testing traditional lifecycle models against behavioural consumption models of mental accounting. It goes on to look at how different sources of income are spent with a particular focus on remittances. The results show that, as in Adams (2002), remittances are more likely to be saved than income from other sources. Furthermore, they are most likely to be used to finance necessities such as food and essential household products. Households do choose to

⁴ See Hayashi (1987) or Zeldes (1989).

consume out of fixed assets; in particular they use these assets to finance health, education and investment. Both remittances and credit are used to smooth consumption⁵ and for investment purposes and there is some degree of substitutability between the two. Non-remittance receiving households turn to credit to fund basic consumption during difficult periods. Whilst credit is also used for productive investment, the receipt of remittances encourages lower-income households to invest in education.

The paper is organised as follows: Section 2 outlines the theoretical framework. Section 3 discusses the data before proceeding with the empirical analysis, together with discussion of the results. Finally, the summary and concluding remarks are drawn in Section 4.

2. Theoretical Framework

The behavioural lifecycle model from which this hypothesis is drawn is proposed in Shefrin and Thaler (1988). They suggest that there exist two selves: a “planner”, who maximises utility as per the standard neo-classical utility function, and a “doer” who carries out all decisions but who is myopic in nature and suffers a psychological “willpower” cost to reducing consumption to the planner’s optimum level. The two selves often have mutually inconsistent preferences but coexist at all times.

Conflict is thus introduced into the standard lifecycle consumption model, which the planner seeks to resolve by constraining the doer to act in a way as close as possible to the optimum. The psychological cost depends upon the level of consumption, current consumption opportunities and the “temptation level” of wealth. This is intuitive; it is more difficult to reduce consumption if it is already low, if the consumption opportunity set is large and if wealth is easily spent.

The unconstrained doer would maximise utility, u_t on the opportunity set, X_t , maximising consumption and utility in each period t . The planner attempts to intervene but reducing today’s consumption carries a psychological willpower cost, w_t ⁶. Thus doer utility is defined as:

$$z_t = u_t - w_t \tag{1}$$

Willpower effort is effective if the maximised values of z_t and u_t are not the same. In this case, the doer has successfully reduced consumption today so that it is nearer the planner’s optimal level. Defining θ_t , a “willpower effort” variable indicating the amount of willpower exercised at date t , $\theta_t^*(c_t, X_t)$ gives the degree of willpower effort required at consumption level c_t given the opportunity set X_t .⁷ In order to reduce consumption at any level, an increase in willpower is required. Any increase in willpower is

⁵ Udry (1990) finds that credit is used for consumption smoothing purposes in Mexico.

⁶ We assume conflict between the planner and the doer. This would arise where the planner’s optimal intertemporal solution requires reducing current consumption in order to save for, say, retirement. Note that, the doer and planner are not in conflict *per se*. A young person earning below his or her permanent income level would do well to dissave in order to increase current consumption according to the planner’s optimum.

⁷ The impact of composition of total wealth which influences the “temptation level” or ease with which wealth can be used for consumption purposes is ignored here for clarity.

painful since the corresponding reduction in consumption reduces z_t . Furthermore, increasing willpower becomes increasingly painful as additional willpower is applied (this follows also from the assumption of concave utility). Formally:

$$\frac{\partial \theta_t^*(\bullet)}{\partial c_t} < 0 \quad \frac{\partial \theta_t^*(\bullet)}{\partial X_t} > 0 \quad \frac{\partial z_t}{\partial \theta_t} < 0 \quad \frac{\partial^2 z_t}{\partial c_t^2} < 0 \quad (2)$$

Given that the doer will not chose to reduce consumption, the planner imposes constraints in order to reduce the opportunity set of the doer, X_t thus reducing the willpower effort required to reduce consumption to a given level. This can be achieved by voluntarily imposing external constraints – physically placing money in bank accounts which do not permit withdrawal for example (saving for pensions)⁸.

To reduce the psychological cost of implementing willpower to reduce consumption at any level, internal constraints can be imposed and heuristic or “rule-of-thumb” behaviour adopted⁹. Mental accounting rules such as “consume out of savings only in event of emergency” or “use remittances to pay for the children’s education” are examples of this behaviour. Although such behaviour reduces the psychological cost of reducing consumption, there is an additional psychological cost, ϕ , to breaking the rule. The rule will thus be kept if: $\phi > \theta_t^*(c_t, X_t)$.

Psychology literature¹⁰ suggests that the easiest rules to obey are those which become habits (saving for example, may become habitual). Exceptions must be rare and well-defined, and the rules must be dynamically stable: it is difficult to break habits¹¹. Although such links between behaviour and economics are well-established in the context of developed countries, this paper shows that they are also relevant for developing countries.

Shefrin and Thaler (1988) divide total wealth into three mental accounts depending upon the temptation level of the asset: current spendable income (Y), current assets (A) and future income (F). The traditional lifecycle consumption model postulates that the marginal propensity to consume out of changes in all three categories is equal. Under the behavioural lifecycle model the different mental accounts exhibit different MPC since it is easier to consume out of current income than future income. Otherwise put, current income exhibits a higher temptation level than future income. We thus expect to observe a much higher MPC out of current income than out of future income. Consumption is no longer a function only of total lifetime wealth but also the composition of that wealth:

⁸ This voluntary reduction of future opportunity sets is comparable with what Karlsson (2003) calls “desire-reducing strategies”.

⁹ Karlsson’s (2003) terms such strategies “willpower strategies”.

¹⁰ See, for example, Ainslie (1975) or, for a review of other commitment devices, Brocas, Carrillo and Dewatripont (2004)

¹¹ Anderson and Nevin (2006) find that saving behaviour is largely a matter of habit. Furthermore, these habits are, at least in part, learnt in the home as a child.

$$C = C(Y, A, F) \quad (3)$$

$$\frac{\partial \ln(C)}{\partial \ln(Y)} \neq \frac{\partial \ln(C)}{\partial \ln(A)} \neq \frac{\partial \ln(C)}{\partial \ln(F)} \quad (4)$$

Where elasticities are given by the partially differentiating (3) with wealth and consumption values in their natural log form.

Shefrin and Thaler (1988) and Lewis and Winnett (1995) use surveys¹² to show that the source of the income and the amount of income are both important in placing income in one account or another. A windfall gain is likely to be placed in the asset account (perhaps savings) while several small gains adding up to the same value tend to be placed in the current income account, even when both of these income gains are anticipated. Analysing the claim that the large bi-annual bonuses which are the norm in Japan contribute to the comparatively high savings rate, Ishikawa and Ueda (1984) estimate MPC from regular and bonus income for Japanese workers. They find that for non-recession years, MPC is significantly higher for regular income than for bonus income (0.685 versus 0.437); Japanese households habitually save over half of their bonus income and these authors conclude that, at least in the short run, habits govern household consumption patterns, while Friedman's Permanent Income Hypothesis (PIH) may be more relevant in the longer run.

Basing his analysis on mental accounting models, Levin (1998) allows for separable assets. In Shefrin and Thaler (1988) all assets are combined – an increase in the value of one's home has the same impact on consumption as a stock market gain. Levin (1998) shows that the marginal propensity to consume out of different assets differs.

The maximising agent will thus face the following budget constraint, where he consumes G goods and holds K assets¹³:

$$\sum_{g=1}^G \sum_{t=1}^T C_{t,g} \leq \sum_{k=1}^K A_k + E_t \left[\sum_{t=1}^T Y_t \right] \quad (5)$$

Consumption of good g is thus a function of income, Y and the different assets held:

$$C_g = C_g(Y, A_1, A_2, \dots, A_K) \quad (6)$$

The marginal propensity to consume out of all assets is not equal:

$$\frac{\partial \ln(C)}{\partial \ln(A_1)} \neq \frac{\partial \ln(C)}{\partial \ln(A_2)} \neq \dots \neq \frac{\partial \ln(C)}{\partial \ln(A_K)} \quad \text{and} \quad \frac{\partial \ln(C)}{\partial \ln(Y)} \neq \frac{\partial \ln(C)}{\partial \ln(W)} \quad (7)$$

¹² In the United States and Netherlands respectively.

¹³ For simplicity the interest and discount rates are set at zero

where W is total wealth. The marginal propensity to consume different goods out of the same asset is not equal:

$$\frac{\partial \ln(C_1)}{\partial \ln(A_k)} \neq \frac{\partial \ln(C_2)}{\partial \ln(A_k)} \neq \dots \neq \frac{\partial \ln(C_G)}{\partial \ln(A_k)} \quad (8)$$

In Levin (1998), different forms of wealth have different “temptation levels”. Thus the MPC out of liquid assets will be higher than for housing assets since income has a high temptation level. Put another way, there are “psychological as well as financial transaction costs associated with spending from different types of assets”¹⁴. In mental accounting terminology, liquid and illiquid assets are placed in separate mental accounts (used to purchase different goods, or goods at different times) and there is a psychological cost to transferring purchase power between accounts. Levin (1998) also tests the hypothesis that liquidity constraints are responsible for the differing MPC rather than behavioural mental accounting reasons but concludes in favour of a behavioural explanation.

This paper extends Levin’s (1998) analysis to include equally liquid income from a variety of sources and tests the mental accounting hypothesis for a developing country, Malawi. Formally, a household has J income sources and owns K categories of assets:

$$C_g = C_g(Y_1, Y_2, \dots, Y_J; A_1, A_2, \dots, A_K) \quad (9)$$

The agent’s budget constraint becomes:

$$\sum_{g=1}^G \sum_{t=1}^T C_{g,t} \leq \sum_{k=1}^K A_k + E_t \left[\sum_{j=1}^J \sum_{t=1}^T Y_{j,t} \right] \quad (10)$$

In addition to allowing MPC out of different wealth categories to differ as in Levin (1998), the MPC out of different, equally liquid income sources are not equal. As required by the behavioural lifecycle model, the different MPC results, at least in part, from internally (not externally) imposed constraints. The varying MPC are due to behavioural reasons such as mental accounting. More specifically agents voluntarily choose to spend differently out of different income sources so that a one-unit increase in wages/salary is not treated in the same way as the same increase in remittance income¹⁵.

This paper seeks to analyse remittance income in the mental accounting framework. It does not seek to explain remittances¹⁶ and does not test different mental accounting models against each other.

¹⁴ Levin (1998)

¹⁵ Adams (2002) finds that, for Pakistan, remittances exhibit a high marginal investment rate of between 0.59 and 0.91, much higher than for other sources of income.

¹⁶ Unfortunately the data do not allow us to make, the distinction between remittances received by a geographically-split household (such as the husband working away while the wife and children stay at home) and a household which receives remittances from other relatives. Explaining receipt of remittances is beyond the scope of this paper.

Rather, this paper shows that mental accounts exist as a means of controlling behaviour in a developing country, Malawi. Furthermore, sources of income are credited to different mental accounts¹⁷. Remittance income in particular is likely to be allocated to its own mental account for a number of reasons. Firstly remittances may come with specific conditions attached. Information asymmetry problems aside, the remitter may require the receiving household to use their income for purposes such as education or else risk losing this income. Secondly, remittances may be considered as either manna from heaven or else the product of someone else's hard work. How remittances are viewed is influenced by culture¹⁸ and the motivation behind the remittance and impacts on the account into which these transfers are placed. In our first example, remittance income is likely to be placed in an account used for general or even luxury consumption. In the second, remittances tend to be used for productive or constructive purposes such as education¹⁹.

3. Empirical Analysis and Results:

3.1: Data

We use data from the Malawian Integrated Household Survey carried out from November 1997 to October 1998. It surveys a representative sample of 10,698 households across Malawi. The data include detailed income and consumption variables as well as a wide range of household and community characteristics.

The average household has 4.3 members or 3.7 members in per adult equivalent terms. 76% of households have children with the mean number of children being 2.01. 75% of household heads are male and the average age is 41 years. 74% of household heads are married and 45% work in agriculture. 13% of households are urban²⁰.

Average reported non-business household income is Malawian Kwacha (MK) 13,311 annually with average consumption equal to MK11,819. Income sources are varied with many households receiving income from several sources. Furthermore, many households reported significant non-cash consumption. Non-cash food consumption for example was equal to MK8,281 or 62% of non-business

¹⁷ This paper focuses on the unitary household model. We look at the choices households make as a unit depending upon the composition of their total spending power, although we recognise the importance of intra-household relations in deciding consumption patterns.

¹⁸ Hart (2005) suggests that culture is a determinant in how people or households view money and their attitudes towards it. Although some forms of mental accounting may be near universal, its exact form is likely to be influenced by cultural and other factors. China for instance has a savings culture, whilst Japanese household finance is traditionally organised by females. Religion may play a role where moral codes or duties (such as zakat in Islam) encourage particular attitudes. Gender and age may also be factors in determining mental account systems (as well as interactions between these two variables and other factors). Financial *savoir faire* will impact on mental accounting systems and can be related to availability of information within a country (institutions and education are important in this aspect as well as the typical financial culture within a home). Similarly, consumption needs and choices will influence the mental accounting structure. These needs and choices will, in turn, be influenced by surroundings, culture, religion, age, etc. (see Colloredo-Mansfeld, (2005), for a good summary of the link between culture and consumption).

¹⁹ See, for example Cox Edwards and Ureta (2003).

²⁰ NSO Classification of rural means that market towns are considered rural with only inhabitants of the four largest cities classified as urban dwellers.

income. The reader should bear in mind that the analysis that follows considers only cash income and consumption despite the fact that a large percentage of total consumption in Malawi is in-kind.

A total of 2,216 households reported receiving remittance income during the month preceding the survey. The mean yearly income from this source was MK4,736 per household. Excluding business and cashcrop income, mean remittances are worth 43% of the average total income of receiving households. Including business income, median remittance income is equal to 40% of median total income, making this estimate of the income share of remittances fairly robust²¹. They are thus an important source of income for these households. The mean total income of remittance-receiving households is significantly lower than the income of those which do not receive income (MK10,999 against MK14,212).

Of the 2,216²² households which reported receiving remittances, 1,091 received transfers from urban areas inside Malawi, the average value of which was MK1,917; 1,105 households received remittances with an average value of MK864 from rural Malawi, and 157 households reported receiving remittances from outside of Malawi averaging MK7,963. The significant difference between the values of remittances received from abroad compared to those sent from within Malawi mean that ideally a separate analysis should be carried out on these. Unfortunately the low number of households which reported receiving such flows mean this is not easy within the context of this study.

Most households reported owning both liquid assets such as livestock or household appliances and illiquid assets such as housing or land. The average value of fixed assets was MK14,838 or 111% of average non-business yearly income.

Consumption is classified into food; farm; clothing; health; fuel; education; general household and investment as well as total consumption. The construction of all variables is described in Appendix I. All households reporting zero income or zero consumption are necessarily dropped from the sample analysed. Mean income, consumption and non-cash consumption and asset ownership as well as information regarding household characteristics is presented in Table 1.

Table 1 [about here].

3.2: Econometric Methods and Empirical Results:

Estimation of income elasticities are made using the ordinary least squares method, with each category of income and consumption entered separately as required by each test:

$$\ln(C_{ig}) = \beta_0 + \beta_1' \ln(Y_{ij}) + \beta_2' X + \varepsilon \quad (11)$$

where C_{ig} is the i th household's consumption on goods in category g ; Y_{ij} denotes the household income from the j th income sources, which includes the value of fixed and liquid assets owned by the household.

²¹ The median is a more representative estimate due to the very high income of some households which reported business income.

²² The sum of households receiving each type of remittance does not add up to 2,216 since some households reported receiving remittances from several origins.

Finally X represents a vector of control variables including household characteristics such as age of the household head, education level of household head and other variables that may influence consumption patterns; a set of regional dummies included to capture systematic differences between regions due to preferences or culture²³ and ε is *i.i.d* $(0, \sigma^2)$ error term.. All other things being equal, a household can choose to consume out of changes in the value of these assets by borrowing against their value.

We regress the log of total consumption against the log of each of the income variables, entered separately and then together; the log of fixed (illiquid) and liquid assets; a series of dummies for different sources of income and control variables and regional dummies. Mental accounting theory suggests that the marginal propensity to consume out of different sources of income is not identical even where the income is equally liquid. That is, households choose not to treat income from different sources identically.

$$\frac{\partial \ln(C)}{\partial \ln(Y_i)} \neq \frac{\partial \ln(C)}{\partial \ln(Y_j)}, i \neq j \quad (12)$$

The results are found in Table 2 below:

Table 2 [about here]

The coefficients on each income source represent marginal propensities to consume. Thus, in Table 2 (regression 1) the marginal propensity to consume out of total income is equal to 0.232. The MPC out of fixed and variables assets are 0.133 and 0.136 respectively. These marginal propensities to consume may seem low but do not include consumption of durable goods or businesses consumption. Including such expenses, Adams (2005) finds marginal propensities to consume of between 0.54 and 0.59 for Guatemala. The same author finds MPC out of total income of 0.149 for rural Pakistan (Adams, 2002). The loan dummy is positive, as one would expect; all other things being equal, accessing credit increases consumption. Having a business, salary or farming income increases consumption, whilst the remittance dummy indicates that households which receive remittances have lower autonomous consumption levels than the average. The constant is positive and significant, representing households' autonomous consumption.

In Table 2 (regression 5) all sources of income are entered simultaneously; since very few households receive income from all sources, the number of observations included is reduced. The traditional model postulates that the MPCs out of each source of income should be equal. Salary exhibits a MPC of 0.295, whilst the MPC out of remittances is 0.191. The MPC out of farming income is positive but not significantly different to zero. MPC out of changes in the value of fixed and liquid assets are

²³ Regional differences are important in Malawi for historical reasons. Regions differ significantly with respect to tribal, ethnic and religious make-up and voting preferences. There are also important urban-rural divisions.

0.165 and 0.131 respectively. Individuals who receive income from all sources appear not to consume equally out of them providing initial support for behavioural models. In particular, at the margin, a greater proportion of remittance than salary income is saved.

In Table 2 (regression 6), the impact of remittances on the consumption/savings trade-off is further analysed by including an interaction term between the remittances dummy and total income. The coefficient on this interaction term is not significant at any conventional levels however it is of the expected negative sign suggesting that receipt of remittances encourages prudence, decreasing MPC and increases savings.

Since the marginal propensity to save out of a source of income is equal to ones less MPC, globally the marginal propensity to save out of remittances is higher than that for salary income. In Table 2 (regression 5), the marginal propensity to save out of farming income is, perhaps surprisingly, equal to one. A similar, high marginal propensity to save out of remittance income is found by Adams (2002). The marginal propensity to save might more justly be termed the marginal propensity to invest as in Adams (2002) since it includes not only savings but also consumption of durable goods and business consumption which are not included in total consumption.

Amongst the control variables, education is positive and sometimes significant suggesting more human capital leads to higher consumption. Finally, the constant is always positive and significant indicating a minimum level is required even where income is zero. In all the regressions regional dummies (which are not reported here) tend to be negative and highly significant. The baseline region is Lilongwe, the capital, suggesting lower consumption in much of the rest of the country. Notably, the coefficients for the other three urban centres (Mzuzu in the north, Zomba and Blantyre in the south) are insignificant indicating that the main divide in consumption is between rural and urban areas²⁴.

The LC-PIH model posits that the marginal propensity to consume any given category of good will be equal for each income source and change in wealth. Income from a given source is not allocated to a particular consumption category. By contrast behavioural, mental accounting models suggest that mental accounts are used for specific purposes. Since income from different sources is assigned into different mental accounts, the MPC for good (g) out of one source of income will not equal the marginal MPC good (h) out of the same source of income. And the MPC for the specific good (g) from source (i) will not equal the MPC (g) out of (j).

$$\frac{\partial \ln(C_g)}{\partial \ln(Y_i)} \neq \frac{\partial \ln(C_h)}{\partial \ln(Y_i)}, g \neq h \quad (13)$$

²⁴ We prefer not to use a simple rural/urban dummy due to the different magnitudes of the coefficients (results available from the authors on request), and the important differences between regions discussed previously.

$$\frac{\partial \ln(C_g)}{\partial \ln(Y_i)} \neq \frac{\partial \ln(C_g)}{\partial \ln(Y_j)}, i \neq j \quad (14)$$

The adult equivalent consumption for each of six categories is regressed against each income source, relevant income dummies and control variables. The low number of observations is due to the fact that few households reported income and consumption in all categories²⁵. Nevertheless the lifecycle model posits that all income is combined for these households.

Table 3 [about here]

Results are presented in Table 3 and are generally supportive of the mental accounting hypothesis that different income is used for different purposes. For those who receive them, remittances are spent on food (with a statistically significant MPC of 0.216), fuel (0.273) and general household items (0.253). Remittances appear not to be used for farm, clothing or health expenses. Remittances exhibit lower MPC than salary income (0.191 against 0.295 for total consumption) showing that remittance income is either saved or used for day-to-day expenses.

Increased land holdings has a negative impact on the consumption of fuel suggesting households which possess more land are better able to cater for their own fuel needs. Interestingly, larger land holdings appear not to influence increased farming consumption. This could suggest that a large part of farming costs are sunk meaning that there is potential for economy of scale gains from combining farms or farming responsibilities. The high MPC for health products out of liquid assets suggests that these assets are sold in order to quickly access funds in health emergencies. More education leads to greater consumption of all categories except farm and fuel, although the large standard error indicates important differences in behaviour. This is perhaps unsurprising, since those with more education are likely to earn more, and migrate to cities where their skills can be better exploited, retaining only small farms requiring low consumption.

Since remittances can be used as a form of insurance, helping to smooth consumption and reduce risk, the receipt of remittances can change household consumption habits. Thus, households which receive remittances will exhibit different MPC to those which do not. In order to focus on these differences, each consumption category is regressed against the log of total non-business income (excluding remittances), the values of fixed and liquid assets, income source dummies and controls. By not limiting the regression to only those households which receive all sources of income the number of observations is increased, limiting any selection bias. Furthermore, this allows an analysis of a greater

²⁵ The presence of sample selection bias has been tested and rejected by placing into each OLS regression relevant Inverse Mills Ratios calculated from probit regressions estimating the likelihood of a household having a positive consumption of each category of good. Although efforts to test for sample selection bias throughout this paper have generally indicated that the risk is minimal, a more thorough examination would require detailed analysis of the causes of poverty in Malawi and the factors affecting receipt of remittances, which is beyond the scope of this paper.

range of consumption categories. Where differences in consumption patterns can be observed between the two groups, there is some indication that the receipt of remittances alters household behaviour. For example the MPC education is higher for non remittance-receiving households than for those which do receive remittances (0.277 against 0.150).

Table 4 [about here]

For certain categories of goods, the coefficients for each group are similar. This is notable in categories likely to include a significant amount of essential consumption such as food (0.185 and 0.175) and general household goods (0.191 and 0.189). For households which do not receive remittances, increased land holdings have the effect of decreasing farm and food consumption, as one would expect. For households which do receive remittances, increased ownership of farmland does not appear to influence consumption of food or farming.

In the investment category, the two groups exhibit significantly different consumption patterns. Households which receive remittances do not exhibit a marginal propensity to invest in production or pensions significantly different to zero. Those which do not receive remittances invest a large proportion of their marginal income, exhibiting a marginal propensity to invest of 0.330. These households also dedicate a proportion of increases in the value of fixed assets to investment (MPC=0.351).

The loan dummy is significantly positive for investment consumption for non-remittance receiving households (0.569) indicating that individuals borrow in order to invest. The loan dummy is significantly positive for food consumption for households which did *not* receive remittances (0.142) but not significantly different from zero for those that did. This result might indicate substitutability between credit and remittance income. Households which could not use remittance income to purchase food had to turn to credit; 27% of loans were taken out in order to purchase food. A similar explanation applies for general household and health expenses.

The constant is not significantly different from zero for either group for education and investment consumption. This is unsurprising given that these categories are non-essential. In the case in which income falls to zero, one can expect households to reduce consumption of these goods to close to zero. The zero constant on farm consumption may indicate that this category is also seen as non-essential. It does not provide any short-term return and, during short periods, such consumption may be reduced to a minimum.

Households which receive remittances have lower reported income than non-receivers (MK14,212 against MK10,999) and this is the case even following the inclusion of remittances in total income. It is therefore possible that the differences between remittances receivers and non-receivers include a wealth

effect. This hypothesis is tested by further splitting the sample into households of above and below median income of MK3,347²⁶.

The potential for capturing an income effect rather than a remittance effect is investigated by splitting the sample into households above and below the median income line. Results are reported for total consumption, food, education, health, general household items, clothing, farm and investment consumption categories. Where remittances have an impact and poverty does not, similar coefficients should be observed for both low and high income groups which receive remittances and similar coefficients for both groups which do not receive remittances. Similarly, if income level has an impact and remittances do not, similar coefficients should be seen for both low-income groups regardless of whether or not they receive remittances. If both poverty and remittances matter, we should see differing coefficients amongst all four sub-groups. The results indicate that both the receipt of remittances and the income-level of a household influence its consumption choices. This is in line with theories of remittances as well as standard economic theories such as Engel's law. Furthermore, there appears to be considerable interaction between income and receipt of remittances.

Analysing total consumption, it can be observed that remittance-receiving households have a higher marginal propensity to save than households of a similar income-level which do not receive remittances. Remittances may act as a "disciplining device" encouraging prudence and the result is in line with research which suggests remitters often attach conditions to the usage of their money.

The loan dummy is strongly positive and significant for below-median households which do not receive remittances for food and general household items – both essentials. This supports the theory that lower income households which do not receive remittances need to access credit in order to purchase essential items. The loan dummy is also significantly positive for higher income households in the investment category. Thus two groups appear to access credit: poorer households which cannot rely on remittances and need credit at times in order to survive, and richer ones which borrow to invest. These results support the hypothesis that both credit and remittances are used as a means of smoothing consumption²⁷.

The link between food consumption and farming income offers further insight into the impact of remittances on consumption behaviour; the farm income dummy is significantly positive for lower income households which do not receive remittance income, but not significantly different from zero for those which do. Thus, low-income households which receive remittances prefer to use this money rather than farm income. Low-income households which do not receive remittance income have no choice but to spend their farming income on food. In the case of above-median income households, the receipt of farm

²⁶ This method results in classifying as "low income" largely the same households deemed to be "poor" as the Malawian National Statistical Office in their generation of a poverty threshold using daily consumption. See NSO (2000), "Poverty Profile in Malawi".

²⁷ Udry (1990) finds that loan repayments in Northern Nigeria are sensitive to shocks received by the lending household.

income also reduces consumption of food for those which receive remittances compare with those which do not. Similar results can be seen for general household items which also incorporates many essential items.

Low-income households which receive remittance income tend not to consume out of their fixed assets; all other groups do. This is particularly evident with respect to food, clothing and general household items. Below-median income households which do not receive remittances do consume out of fixed assets (perhaps borrowing against them) whilst those that do receive remittances choose not to consume out of their fixed assets.

All groups analysed consume out of liquid assets: this is unsurprising since the point of these assets is to turn them into cash for consumption (or savings/investment). Income appears to influence the use of this form of income more than the receipt of remittances. For example, above-median income households use these assets to help fund education and health, whilst below-median income households tend not to. Business income is used to increase consumption of most categories analysed.

The marginal propensity to spend on education for remittance-receiving, low-income households is greater than unity. The receipt of remittances serves to increase the share of education in total household consumption. This offers support to research which shows that remittances are often designated for specific purposes such as education.

Results are reported in tables 5.1 to 5.9²⁸, and control variables are removed for clarity.

Table 5.1 to 5.9 [about here]

Levin (1998) tests MPC out of different wealth categories; he groups together all income sources into one current income variable, and finds that the MPC out of current income is higher than it is for changes in housing wealth or future income. He then tests the theory that external liquidity constraints can explain the low MPC out of these illiquid assets, concluding that they can not.

This paper tests for MPC different categories of good out of different income and wealth sources. The different MPCs for each current income source means that no such test is necessary – all cash income is equally liquid, so any constraints are necessarily internally imposed.

It is possible however that those households that do not spend out of increases in the value of illiquid assets such as their homes do so because of liquidity constraints. This seems unlikely for two reasons: firstly over 17% of households surveyed reported having accessed credit during the year preceding the survey. Secondly, low-income households which do not receive remittances exhibit a tendency to consume essential goods out of fixed assets, with there being some evidence of these households actually raising credit against these assets.

²⁸ The low sample size for some of the regressions is unfortunate but is the result of analysing the different groups. Because of this, this section has sought to look at the overall results presented in tables 5.1 to 5.9.

We verify the hypothesis however by regressing the log of total consumption on the log of total income (this time including remittances²⁹), the log of the value of liquid and illiquid assets and all control variables.

Table 6 [about here]

The sample is split into households which had accessed credit during the 12 months previous to the survey, and those which had not. For both groups, the MPC out of fixed assets is positive and significant, suggesting that any zero coefficients on this variable are not due to (externally-imposed) liquidity constraint. The similarity of the coefficients in general also indicates that there are no systematic differences between the two groups.

4. Summary and Concluding Remarks:

The results offer support for the use of mental accounting models in Malawi. Households do not, in general, lump all income together, but choose to allocate income differently. Both income level and receipt of remittances have a role in determining consumption patterns.

This paper has extended the theoretical work of Levin (1998) in order to show that household in a developing country choose to consume differently out of equally liquid forms of income. The findings support the implicit assumption in many studies of remittances that households regard this flow of income as distinct from others and thus choose to use it differently. Furthermore it offers evidence that the reason for this lies, at least in part, in mental accounting. The results are consistent with Adams (2002) who finds that households are more likely to save out of remittance income than other sources, but offers an alternative explanation. In addition to simply analysing the consumption/savings trade-off, we extend Adams (2002) work by looking at how remittances are spent and how their receipt may alter behaviour.

Remitters may require receiving households to use this income in order to fund education, increasing the total share of education in total household consumption.. Furthermore, remittances are more likely to be saved than some other forms of income.

Households which had accessed credit exhibit similar consumption patterns to those which did not. The differences observed in MPC out of current income and asset income is not due to liquidity constraints, but is rather a choice made by individual households.

Policy formulation by governments, NGOs and credit or savings institutions need to take account of mental accounting models since these influence consumption and savings habits. Remittances should be encouraged in Malawi since they encourage savings and consumption of education. Furthermore, remittances are often used to fund necessary consumption such as food and household goods. Current projects to help reduce the costs of remittances are a step in the right direction.

²⁹ There is no reason to exclude remittances from total income in this case.

Banks are more likely to be successful in attracting household funds if they encourage the saving of particular forms of income, notably remittances. On the lending side, micro-finance organisations must not only improve access to credit, but must ensure that mental accounting models encourage the “constructive” use of credit; targeted publicity may help to support this aim. Lending institutions requiring collateral may be unsuccessful if mental accounting does not permit households to consume out of these assets.

Appendix 1: Description of Variables

The data from IHS98 comes in a rather raw format. Some information was collected on an individual basis and other information for the household, and there is much scope for duplication of information. Where necessary, checks for duplication were made and duplicates dropped

Inflation Adjustment Issues

The survey was carried out from November 1997 to October 1998 during which time the country experienced a relatively high inflation rate: International Financial Statistics³⁰ show an inflation rate of 29.75% during 1998. Furthermore prices vary considerable around the country and in particular between urban and rural areas³¹. During the survey, information was collected on local prices in each of the 29 regions where the survey was carried out. This information was then used to construct monthly food, non-food and total price indexes for each region. These price indexes correspond more closely to the purchases of the households surveyed and are more detailed than the inflation data collected by the Reserve Bank of Malawi. All monetary values are adjusted according to the time the household was surveyed and the region in which they are situated.

This adjustment presents no difficulties where the data were collected at a specific point in time or where the recall period was relatively short, but posed problems where the recall period was longer or where there was missing information as to the month in which the household completed the survey.

Consumption Variables

| Variable | Description |
|-------------------------------------|--|
| Cons(food) | This information is gathered from a diary which each household kept for an average of 26 days. The data was annualised, placed in per adult equivalent and then adjusted for inflation. |
| Cons(farm) | This consists of food crops and livestock expenditure. Since most farms are small holdings, this forms part of the household consumption. The recall period for this consumption was 12 months. Data in yearly, inflation-adjusted PAE terms. |
| Cons(clothing) | This includes all clothing consumption for the household. The recall period was 3 months, and consumption is annualised, adjusted for inflation and placed in PAE terms. |
| Cons(health) | Household health consumption. The recall period was 12 months, and consumption is annualised, adjusted for inflation and placed in PAE terms. |
| Cons(household / General Household) | This includes consumption of utensils, personal and household hygiene, linen, communication (stamps, newspapers, telephone,...) and basic house repair and transport costs. Consumption is annualised, adjusted for inflation and placed in PAE terms. |
| Cons(invest) | This includes productive investment – for example in industry, and investment in pensions/life insurance. The recall period was 12 months, and consumption is annualised, adjusted for inflation and placed in PAE terms. |
| Cons(durables) | Consumption of durable goods including appliances such as televisions, furniture and newly purchased vehicles. Not used as a dependent variable since durable goods also provide a stream of services/income which are used to explain the purchase of such goods. |
| Cons(remittances) | Remittances sent by the household. |
| Cons(fuel) | Household fuel consumption. The recall period was approximately 1 month, and consumption is annualised, adjusted for inflation and placed in PAE terms. |
| Cons(other) | Includes legal fees and fines, and an “other” category for |

³⁰ Accessed through www.esds.ac.uk.

³¹ This is discussed in the National Statistical Office's own series of studies through the Poverty Monitoring System of the Government of Malawi. See “Deriving a household welfare indicator for households surveyed in the Malawi IHS98”, June 2000.

| | |
|-----------------|--|
| | goods which did not fall into any of the other categories in the diary kept by the surveyed households. |
| Cons(business) | Household business expenditure. The recall period was 1 month, and expenditure is annualised, adjusted for inflation and placed in PAE terms. |
| Cons(cashcrops) | Household expenditure on cash crops. The recall period was 12 months, and expenditure is annualised, adjusted for inflation and placed in PAE terms. |
| Cons(total) | |

Income Variables

| Variable | Description |
|------------------|---|
| Inc(salary) | Wage or salary income earned by members of the household. The recall period was one month. The data was annualised, placed in per adult equivalent and then adjusted for inflation. |
| Inc(farm) | This consists of food crops and livestock income. Since most farms are small holdings, this forms part of the household income. The recall period for this income was 12 months. Data in yearly, inflation-adjusted PAE terms. |
| Inc(remittances) | Remittance income for the household. The recall period was 1 month, and income is annualised, adjusted for inflation and placed in PAE terms. |
| Inc(loan) | Credit income for the household. The recall period was 12 months, and credit value is annualised, adjusted for inflation and placed in PAE terms. Since credit is likely to be a function of income (i.e. determined after other income is known) I do not include it in the regression as it is, but rather control for loan income using a dummy. Income is annualised, adjusted for inflation and placed in PAE terms. |
| Inc(other) | This includes income from past investments and an "other" category not determined in the survey results. Income is annualised, adjusted for inflation and placed in PAE terms. |
| Inc(cashcrops) | This includes income from sales of cash crops. The recall period was 12 months, and income is annualised, adjusted for inflation and placed in PAE terms. |
| Inc(business) | Business income. The recall period was 1 month, and income is annualised, adjusted for inflation and placed in PAE terms. |
| Inc(total) | |

Asset Variables

| Variable | Description |
|----------------|--|
| Assets(fixed) | This is the inflation adjusted value of illiquid assets owned by the household. This includes housing and land. The survey recorded the current value of such assets as indicated by the head of the household. The value is adjusted for inflation. |
| Assets(liquid) | This is the inflation adjusted value of liquid assets owned by the household. This includes livestock ownership and items such as cars or household appliances. The survey recorded the current value of such assets as indicated by the head of the household. The value is adjusted for inflation. |

Non-cash Consumption Variables

This information is not used in regressions due to the nature of the paper but is presented here to help interpretation of the summary statistics. Since non-cash consumption is common in Malawi, it is essential to give an idea as to its importance.

| Variable | Description |
|---------------------|--|
| Cons(in-kind food) | Food consumption which was not paid for by cash. The source is either gift, own production or (occasionally) barter. The recall period for this expenditure was 3 days. Data in yearly, inflation-adjusted PAE terms. |
| Cons(in-kind other) | This consists of any non-food item not purchased in cash. This particularly includes firewood collected by the household. The recall period for this consumption was 3 days. Data in yearly, inflation-adjusted PAE terms. |

Appendix 2: Means and Regressions

Table 1: Descriptive Statistics

| Variable | Obs | Mean | Std. | Min | Max |
|----------------------------------|-------|---------|-----------|-----|------------|
| Household Characteristics | | | | | |
| Age: <25 | 10698 | 0.14 | 0.35 | 0 | 1 |
| Age: 26-45 | 10698 | 0.52 | 0.50 | 0 | 1 |
| Age: 46-65 | 10698 | 0.26 | 0.44 | 0 | 1 |
| Age: >65 | 10698 | 0.09 | 0.28 | 0 | 1 |
| Dummy(male head) | 10698 | 0.75 | 0.43 | 0 | 1 |
| Dummy(agriculture) | 10698 | 0.45 | 0.50 | 0 | 1 |
| Dummy(married) | 10698 | 0.74 | 0.44 | 0 | 1 |
| Household Size | 10698 | 4.31 | 2.35 | 1 | 18 |
| Per Adult Equivalent | 10698 | 3.68 | 2.01 | 1 | 14.75 |
| Dummy(children) | 10698 | 0.76 | 0.42 | 0 | 1 |
| Number of Children | 10698 | 2.01 | 1.74 | 0 | 12 |
| Education Level (0-6) | 10405 | 2.22 | 1.54 | 0 | 6 |
| Dummy(urban) | 10698 | 0.13 | 0.34 | 0 | 1 |
| Acres of Land Owned | 10698 | 1.58 | 1.79 | 0 | 49 |
| Income | | | | | |
| Inc(farm) | 3918 | 1,374 | 2,663 | 4 | 52,345 |
| Inc(salary) | 2703 | 22,490 | 61,711 | 15 | 1,128,000 |
| Inc(remittances) | 2216 | 4,736 | 13,096 | 12 | 308,520 |
| Inc(credit) | 1830 | 3,029 | 20,672 | 2 | 500,000 |
| Inc(invest) | 411 | 17,265 | 64,083 | 58 | 900,000 |
| Inc(cashcrops) | 2573 | 5,210 | 14,456 | 8 | 372,000 |
| Inc(business) | 2327 | 191,611 | 2,823,451 | 132 | 86,400,000 |
| Inc(total) | 6490 | 13,311 | 52,749 | 4 | 1,202,400 |
| Consumption | | | | | |
| Cons(housing) | 2067 | 6,456 | 28,711 | 9 | 760,320 |
| Cons(fuel) | 7974 | 833 | 2,818 | 9 | 102,254 |
| Cons(clothing) | 6319 | 1,954 | 4,714 | 4 | 189,298 |
| Cons(utensils) | 2369 | 606 | 1,162 | 3 | 18,000 |
| Cons(linen) | 3262 | 528 | 763 | 0 | 13,668 |
| Cons(hygiene) | 8178 | 551 | 1,390 | 5 | 53,176 |
| Cons(communication) | 1446 | 937 | 1,713 | 1 | 19,246 |
| Cons(household)* | 9124 | 9,874 | 23,965 | 5 | 860,561 |
| Cons(farm) | 5042 | 844 | 2,100 | 1 | 102,207 |
| Cons(health) | 5407 | 494 | 2,364 | 1 | 82,420 |
| Cons(vehicle upkeep) | 906 | 2,401 | 8,591 | 2 | 137,500 |
| Cons(education) | 1132 | 3,214 | 8,355 | 2 | 108,608 |
| Cons(invest) | 278 | 5,165 | 11,366 | 5 | 99,362 |
| Cons(fees) | 804 | 4,891 | 12,581 | 3 | 105,450 |
| Cons(food) | 9065 | 5,137 | 8,969 | 5 | 247,890 |
| Cons(remittances) | 2361 | 4,590 | 24,741 | 1 | 960,000 |
| Cons(appliances) | 2306 | 951 | 4,088 | 1 | 133,602 |
| Cons(vehicles purchase) | 65 | 16,940 | 31,435 | 35 | 121,500 |
| Cons(furniture) | 1936 | 666 | 3,216 | 3 | 87,000 |
| Cons(durables)* | 3468 | 1,322 | 6,902 | 1 | 133,980 |
| Cons(cashcrops) | 1773 | 1,908 | 4,798 | 0 | 70,620 |
| Cons(business) | 1727 | 108,788 | 1,718,193 | 28 | 45,600,000 |
| Cons(total)* | 10105 | 11,819 | 32,637 | 5 | 960,000 |
| Non-cash Consumption | | | | | |
| Cons(in-kind food) | 6836 | 8281 | 9081 | 22 | 149851 |
| Cons(in-kind other) | 876 | 2392 | 4990 | 144 | 113880 |
| Assets | | | | | |
| Assets(fixed) | 9538 | 14838 | 132021 | 24 | 10000000 |
| Assets(liquid) | 10492 | 8795 | 87232 | 2 | 5286000 |

*Indicates a consumption category which is the sum of several other groups of consumption included in the table.

Table 2: Total Consumption from Different Income Sources

| OLS Regression - Dependent Variable: Total Consumption (excluding durables) | | | | | | |
|---|-----------------------|----------------------|----------------------|----------------------|---------------------|-----------------------|
| Regression | 1 | 2 | 3 | 4 | 5 | 6 |
| Income(total) | 0.232*** (20.824) | | | | | 0.233*** (20.760) |
| Income(salary) | | 0.422*** (16.514) | | | 0.295*** (2.961) | |
| Income(remittances) | | | 0.181*** (10.103) | | 0.191** (2.303) | |
| Income(farm) | | | | 0.211*** (15.057) | 0.107 (1.254) | |
| Income(total)*Dummy(remittances) | | | | | | -0.006 (-0.656) |
| Assets(fixed) | 0.133*** (11.150) | 0.063*** (3.382) | 0.129*** (5.873) | 0.183*** (11.484) | 0.165* (1.875) | 0.133*** (11.146) |
| Assets(liquid) | 0.136*** (13.754) | 0.162*** (9.393) | 0.141*** (7.738) | 0.102*** (8.060) | 0.131 (1.554) | 0.136*** (13.759) |
| Dummy(loan) | 0.176*** (5.284) | 0.133** (2.278) | 0.145** (2.407) | 0.187*** (4.631) | 0.171 (0.818) | 0.177*** (5.290) |
| Dummy(business) | 0.302*** (9.437) | 0.188*** (3.149) | 0.329*** (5.621) | 0.332*** (8.621) | 0.478** (2.109) | 0.303*** (9.450) |
| Dummy(salary) | 0.148*** (3.778) | | 0.498*** (7.289) | 0.535*** (11.368) | | 0.147*** (3.756) |
| Dummy(remittances) | -0.102*** (-3.282) | 0.063 (1.013) | | 0.058 (1.561) | | -0.096*** (-2.955) |
| Dummy(farm) | 0.205*** (6.297) | 0.129** (2.274) | 0.117** (2.252) | | | 0.206*** (6.321) |
| Acres of Land | -0.008 (-0.858) | -0.025 (-1.373) | 0.009 (0.578) | 0.006 (0.559) | -0.030 (-0.491) | -0.007 (-0.831) |
| Age: 26-45 | 0.010 (0.256) | 0.106 (1.492) | 0.134* (1.869) | -0.038 (-0.755) | 0.351 (1.429) | 0.010 (0.249) |
| Age: 46-65 | 0.006 (0.134) | 0.078 (0.986) | 0.069 (0.873) | -0.040 (-0.717) | -0.034 (-0.117) | 0.006 (0.127) |
| Age: >65 | 0.005 (0.085) | 0.003 (0.034) | 0.209** (2.150) | -0.082 (-1.183) | 0.246 (0.635) | 0.005 (0.082) |
| Dummy(male head) | 0.042 (1.100) | 0.077 (1.109) | -0.021 (-0.299) | 0.021 (0.450) | -0.380 (-1.142) | 0.042 (1.088) |
| Dummy(agriculture) | 0.020 (0.760) | 0.037 (0.816) | 0.042 (0.905) | -0.020 (-0.640) | 0.108 (0.581) | 0.020 (0.761) |
| Dummy(married) | -0.040 (-1.021) | -0.062 (-0.879) | 0.058 (0.819) | -0.029 (-0.613) | 0.398 (1.369) | -0.039 (-1.006) |
| Number of Children | -0.016 (-0.997) | -0.039 (-1.382) | -0.006 (-0.204) | -0.010 (-0.485) | -0.092 (-0.791) | -0.017 (-1.003) |
| Household Size | 0.007 (0.604) | 0.007 (0.331) | 0.004 (0.181) | 0.001 (0.096) | -0.006 (-0.062) | 0.007 (0.603) |
| Education | 0.013 (1.536) | 0.027* (1.831) | 0.014 (0.904) | -0.003 (-0.328) | 0.128* (1.975) | 0.013 (1.530) |
| Constant | 4.720*** (28.963) | 3.513*** (13.456) | 5.208*** (15.137) | 5.356*** (12.152) | 2.535** (2.009) | 4.717*** (28.926) |
| N | 5863 | 1747 | 1830 | 3572 | 110 | 5863 |
| r² | 0.483 | 0.573 | 0.431 | 0.403 | 0.706 | 0.483 |
| F | 118.28 | 50.695 | 30.045 | 52.862 | 3.834 | 115.761 |

t-ratios in parenthesis, coefficients significant at * 10%, ** 5% and ***1%

Table 3: Consumption of Different Goods from Different Income

| Dependant Variable | exp_total | exp_food | exp_farm | exp_clothing | exp_health | exp_household* | exp_fuel |
|----------------------------|---------------------|---------------------|--------------------|---------------------|--------------------|---------------------|-----------------------|
| Income(salary) | 0.295*** (2.961) | 0.472*** (3.678) | 0.258 (1.295) | 0.470*** (2.790) | 0.194 (1.125) | 0.416*** (4.084) | 0.447*** (4.040) |
| Income(remittances) | 0.191** (2.303) | 0.216** (2.004) | 0.225 (1.490) | 0.190 (1.305) | -0.002 (-0.017) | 0.253*** (2.936) | 0.273*** (2.812) |
| Income(farm) | 0.107 (1.254) | 0.151 (1.360) | 0.155 (0.955) | 0.034 (0.216) | 0.098 (0.656) | 0.116 (1.312) | 0.184* (1.842) |
| Assets(fixed) | 0.165* (1.875) | 0.102 (0.909) | 0.394** (2.182) | 0.106 (0.691) | -0.169 (-1.113) | 0.113 (1.268) | 0.087 (0.900) |
| Assets(liquid) | 0.131 (1.554) | -0.049 (-0.441) | -0.068 (-0.363) | 0.199 (1.380) | 0.223 (1.504) | 0.082 (0.940) | -0.070 (-0.750) |
| Dummy(loan) | 0.171 (0.818) | -0.000 (-0.001) | -0.102 (-0.257) | 0.457 (1.361) | -0.462 (-1.253) | 0.240 (1.108) | 0.336 (1.351) |
| Dummy(business) | 0.478** (2.109) | 0.826** (2.640) | 0.137 (0.331) | 0.210 (0.485) | -0.102 (-0.279) | 0.730*** (3.010) | 0.595** (2.275) |
| Acres of Land | -0.030 (-0.491) | -0.009 (-0.113) | -0.015 (-0.138) | -0.019 (-0.186) | 0.110 (1.129) | -0.061 (-0.979) | -0.234*** (-3.453) |
| Age: 26-45 | 0.351 (1.429) | 0.107 (0.319) | 0.129 (0.265) | 0.184 (0.407) | 0.381 (0.819) | 0.249 (0.954) | 0.284 (0.968) |
| Age: 46-65 | -0.034 (-0.117) | -0.037 (-0.097) | 0.127 (0.224) | -0.137 (-0.259) | -0.207 (-0.384) | 0.032 (0.107) | 0.098 (0.286) |
| Age: >65 | 0.246 (0.635) | 0.323 (0.653) | 0.896 (1.261) | -0.298 (-0.449) | -0.689 (-0.979) | 0.074 (0.188) | 0.513 (1.139) |
| Dummy(male head) | -0.380 (-1.142) | -0.471 (-1.089) | 0.151 (0.239) | 0.371 (0.646) | 0.310 (0.562) | -0.303 (-0.882) | 0.094 (0.242) |
| Dummy(agriculture) | 0.108 (0.581) | 0.147 (0.606) | 0.419 (1.126) | 0.352 (1.062) | 0.233 (0.727) | 0.091 (0.472) | 0.334 (1.535) |
| Dummy(married) | 0.398 (1.369) | 0.133 (0.345) | 0.325 (0.554) | 0.082 (0.167) | 0.000 (0.001) | 0.209 (0.691) | 0.209 (0.606) |
| Number of Children | -0.092 (-0.791) | -0.131 (-0.875) | -0.127 (-0.583) | -0.078 (-0.387) | -0.225 (-1.058) | -0.088 (-0.739) | 0.233* (1.788) |
| Household Size | -0.006 (-0.062) | 0.091 (0.737) | 0.025 (0.151) | 0.040 (0.248) | 0.199 (1.198) | 0.006 (0.063) | -0.101 (-0.929) |
| Education | 0.128* (1.975) | 0.142 (1.660) | -0.077 (-0.592) | 0.285** (2.272) | 0.236** (2.084) | 0.198*** (2.989) | 0.099 (1.288) |
| Constant | 2.535** (2.009) | 1.184 (0.730) | 0.467 (0.206) | -3.776* (-1.850) | -1.305 (-0.637) | 1.398 (1.093) | -0.038 (-0.027) |
| N | 110 | 103 | 85 | 90 | 82 | 104 | 97 |
| r2 | 0.706 | 0.640 | 0.567 | 0.575 | 0.545 | 0.717 | 0.738 |
| F | 3.834 | 2.752 | 1.375 | 1.660 | 1.292 | 4.000 | 4.124 |

* Composite variable: see appendix1 for details. t-ratios in parenthesis, coefficients significant at * 10%, ** 5% and ***1%

Table 4: Comparing Remittance-Receiving Households with non-Remittance Households

| Consumption Category | | food | | education | | health | | general household* | |
|---------------------------|--|----------------------|-----------------------|---------------------|-----------------------|---------------------|----------------------|----------------------|-----------------------|
| Receive Remittances | | Yes | No | Yes | No | Yes | No | Yes | No |
| Income(total) | | 0.185*** (6.534) | 0.175*** (11.486) | 0.150 (1.273) | 0.277*** (4.059) | 0.201*** (5.513) | 0.178*** (7.814) | 0.191*** (8.241) | 0.189*** (15.147) |
| Assets(fixed) | | 0.124*** (3.914) | 0.148*** (9.431) | 0.192** (2.020) | 0.130** (2.478) | 0.094** (2.289) | 0.186*** (7.873) | 0.143*** (5.508) | 0.147*** (11.446) |
| Assets(liquid) | | 0.062** (2.322) | 0.099*** (7.641) | 0.230** (2.230) | 0.380*** (6.701) | 0.109*** (3.222) | 0.134*** (6.884) | 0.135*** (6.191) | 0.144*** (13.572) |
| Dummy(loan) | | 0.065 (0.765) | 0.142*** (3.220) | 0.094 (0.318) | -0.110 (-0.642) | 0.048 (0.450) | 0.127** (1.980) | 0.084 (1.222) | 0.130*** (3.597) |
| Dummy(business) | | 0.575*** (6.706) | 0.379*** (8.928) | -0.295 (-1.059) | -0.100 (-0.581) | 0.029 (0.275) | 0.057 (0.937) | 0.532*** (7.588) | 0.333*** (9.574) |
| Dummy(farm) | | -0.140 (-1.339) | 0.128** (2.575) | -0.275 (-0.643) | -0.231 (-1.098) | 0.073 (0.570) | 0.007 (0.101) | -0.117 (-1.364) | 0.091** (2.218) |
| Dummy(salary) | | -0.060 (-0.548) | 0.288*** (5.381) | 0.306 (0.743) | -0.653*** (-2.841) | -0.239* (-1.731) | 0.020 (0.260) | -0.042 (-0.471) | 0.253*** (5.752) |
| Acres of Land | | -0.023 (-1.147) | -0.048*** (-3.870) | -0.080* (-1.685) | 0.002 (0.035) | -0.025 (-1.067) | -0.036** (-2.108) | -0.014 (-0.840) | -0.029*** (-2.901) |
| Age: 26-45 | | 0.133 (1.270) | -0.076 (-1.447) | 0.314 (0.850) | -0.081 (-0.378) | 0.014 (0.103) | -0.041 (-0.533) | 0.079 (0.916) | -0.091** (-2.101) |
| Age: 46-65 | | 0.077 (0.656) | -0.050 (-0.845) | 0.378 (0.953) | 0.012 (0.051) | -0.028 (-0.181) | -0.016 (-0.184) | 0.020 (0.208) | -0.030 (-0.617) |
| Age: >65 | | 0.276* (1.949) | -0.156** (-2.079) | 0.289 (0.607) | -0.157 (-0.441) | 0.174 (0.946) | 0.118 (1.047) | 0.113 (0.975) | -0.153** (-2.494) |
| Dummy(male head) | | -0.129 (-1.276) | 0.032 (0.647) | 0.328 (0.874) | -0.008 (-0.037) | 0.018 (0.140) | 0.053 (0.732) | -0.110 (-1.330) | 0.048 (1.182) |
| Dummy(agriculture) | | 0.043 (0.641) | -0.033 (-0.955) | 0.076 (0.303) | -0.050 (-0.344) | 0.161* (1.865) | -0.062 (-1.210) | 0.023 (0.420) | -0.058** (-2.055) |
| Dummy(married) | | -0.018 (-0.177) | -0.013 (-0.260) | 0.110 (0.310) | -0.059 (-0.282) | 0.117 (0.887) | 0.053 (0.720) | -0.002 (-0.022) | -0.020 (-0.481) |
| Number of Children | | 0.008 (0.188) | -0.023 (-1.039) | 0.097 (0.648) | -0.040 (-0.409) | 0.019 (0.353) | 0.008 (0.255) | -0.001 (-0.015) | 0.002 (0.096) |
| Household Size | | 0.007 (0.204) | 0.014 (0.837) | -0.059 (-0.525) | 0.054 (0.718) | -0.008 (-0.194) | -0.000 (-0.010) | -0.000 (-0.001) | -0.006 (-0.437) |
| Education | | 0.023 (1.048) | 0.024** (2.175) | -0.041 (-0.507) | -0.019 (-0.428) | -0.017 (-0.576) | 0.004 (0.233) | 0.003 (0.153) | 0.012 (1.365) |
| Constant | | 4.921*** (10.805) | 4.471*** (21.682) | -0.159 (-0.131) | -0.046 (-0.070) | 1.390** (2.418) | 0.720** (2.248) | 5.214*** (13.976) | 4.942*** (29.207) |
| N | | 1032 | 3651 | 182 | 469 | 731 | 2334 | 1036 | 3673 |
| r2 | | 0.393 | 0.434 | 0.659 | 0.545 | 0.408 | 0.351 | 0.495 | 0.545 |
| F | | 14.515 | 62.869 | 6.386 | 11.825 | 10.732 | 28.088 | 22.096 | 98.749 |

Composite variable: see Appendix1 for details. t-ratios in parenthesis, coefficients significant at * 10%, ** 5% and ***1%; Yes indicates remittance-receiving group, No indicates households in this group do not receive remittances.

Table 4 continued

| Consumption Category | investment | | farm | | clothing | | fuel | |
|---------------------------|---------------------|----------------------|---------------------|----------------------|-----------------------|----------------------|---------------------|-----------------------|
| | Yes | No | Yes | No | Yes | No | Yes | No |
| Receive Remittances | | | | | | | | |
| Income(total) | 0.191 (0.532) | 0.330** (2.510) | 0.236*** (6.693) | 0.226*** (11.658) | 0.254*** (6.898) | 0.192*** (8.695) | 0.150*** (5.547) | 0.184*** (11.857) |
| Assets(fixed) | 0.052 (0.185) | 0.351*** (3.225) | 0.203*** (4.967) | 0.175*** (7.838) | 0.154*** (3.774) | 0.128*** (5.606) | 0.164*** (5.465) | 0.178*** (11.182) |
| Assets(liquid) | 0.329 (1.584) | 0.117 (1.191) | 0.163*** (4.629) | 0.199*** (10.935) | 0.170*** (4.747) | 0.166*** (8.586) | 0.091*** (3.558) | 0.124*** (9.347) |
| Dummy(loan) | -0.356 (-0.297) | 0.569** (1.996) | -0.024 (-0.236) | 0.151*** (2.711) | -0.010 (-0.090) | -0.012 (-0.183) | 0.108 (1.362) | 0.029 (0.649) |
| Dummy(business) | -0.023 (-0.029) | 0.548* (1.771) | 0.264*** (2.592) | 0.128** (2.336) | 0.322*** (2.942) | 0.251*** (4.225) | 0.193** (2.421) | 0.227*** (5.289) |
| Dummy(farm) | -0.957 (-0.661) | -0.540 (-1.346) | 0.395*** (2.972) | 0.319*** (4.881) | 0.037 (0.270) | 0.029 (0.415) | -0.048 (-0.481) | 0.012 (0.239) |
| Dummy(salary) | -0.824 (-0.793) | -0.683 (-1.504) | -0.165 (-1.215) | -0.109 (-1.564) | -0.060 (-0.425) | 0.149** (1.980) | -0.030 (-0.294) | 0.084 (1.540) |
| Acres of Land | -0.274 (-1.414) | 0.078 (0.700) | 0.037 (1.584) | 0.111*** (7.242) | -0.009 (-0.371) | -0.004 (-0.233) | -0.036* (-1.914) | -0.100*** (-8.020) |
| Age: 26-45 | -1.643* (-1.989) | 0.141 (0.352) | -0.106 (-0.833) | 0.044 (0.625) | -0.272* (-1.920) | -0.148* (-1.934) | -0.091 (-0.915) | 0.001 (0.025) |
| Age: 46-65 | -1.539 (-1.343) | 0.257 (0.589) | -0.039 (-0.269) | 0.014 (0.172) | -0.332** (-2.100) | -0.046 (-0.537) | -0.024 (-0.218) | 0.037 (0.597) |
| Age: >65 | -1.131 (-0.917) | 0.080 (0.153) | 0.027 (0.151) | -0.035 (-0.348) | 0.049 (0.261) | -0.249** (-2.273) | 0.091 (0.679) | -0.049 (-0.631) |
| Dummy(male head) | -0.966 (-0.691) | -0.566 (-1.481) | -0.169 (-1.287) | -0.031 (-0.468) | 0.090 (0.674) | 0.059 (0.792) | 0.107 (1.117) | 0.069 (1.353) |
| Dummy(agriculture) | -0.609 (-1.000) | -0.521** (-2.024) | 0.079 (0.933) | -0.008 (-0.176) | 0.184** (2.066) | -0.072 (-1.457) | 0.079 (1.232) | 0.039 (1.116) |
| Dummy(married) | 1.470 (1.038) | 0.229 (0.618) | 0.077 (0.583) | 0.024 (0.355) | -0.141 (-1.053) | -0.011 (-0.145) | 0.063 (0.662) | -0.013 (-0.251) |
| Number of Children | -0.300 (-0.711) | 0.127 (0.856) | -0.011 (-0.209) | 0.013 (0.454) | -0.029 (-0.506) | 0.014 (0.432) | 0.079* (1.882) | 0.015 (0.692) |
| Household Size | 0.281 (0.855) | -0.141 (-1.269) | 0.027 (0.646) | -0.012 (-0.531) | 0.034 (0.782) | -0.009 (-0.375) | -0.042 (-1.279) | -0.018 (-1.058) |
| Education | -0.033 (-0.178) | -0.068 (-0.865) | -0.032 (-1.133) | -0.003 (-0.207) | -0.082*** (-2.782) | -0.006 (-0.402) | 0.003 (0.124) | 0.004 (0.402) |
| Constant | 3.442 (1.127) | 1.054 (0.790) | 0.706 (1.235) | 0.295 (0.963) | 1.462** (2.471) | 2.633*** (8.897) | 3.142*** (7.443) | 2.509*** (12.140) |
| N | 41 | 135 | 785 | 2371 | 820 | 2737 | 939 | 3271 |
| r² | 0.863 | 0.650 | 0.375 | 0.391 | 0.352 | 0.254 | 0.488 | 0.507 |
| F | 3.041 | 7.041 | 9.859 | 33.205 | 9.558 | 20.871 | 19.368 | 75.261 |

Composite variable: see Appendix1 for details. t-ratios in parenthesis, coefficients significant at * 10%, ** 5% and ***1%; Yes indicates remittance-receiving group, No indicates households in this group do not receive remittances.

Table 5.1

| Receive Remittances | Total Consumption* | | | |
|------------------------|---------------------|---------------------|----------------------|----------------------|
| | Yes | | No | |
| | Low | High | Low | High |
| Income(total) | 0.178*** (4.550) | 0.292*** (8.074) | 0.236*** (12.334) | 0.484*** (15.663) |
| Assets(fixed) | 0.028 (0.639) | 0.193*** (5.484) | 0.174*** (8.398) | 0.059*** (3.009) |
| Assets(liquid) | 0.137*** (3.668) | 0.135*** (4.415) | 0.119*** (7.569) | 0.126*** (7.125) |
| Dummy(loan) | 0.110 (0.987) | 0.181* (1.873) | 0.227*** (4.339) | 0.079 (1.307) |
| Dummy(business) | 0.386*** (3.437) | 0.354*** (3.669) | 0.306*** (6.203) | 0.159*** (2.672) |
| Dummy(farm) | 0.311* (1.870) | 0.060 (0.562) | 0.445*** (6.354) | 0.225*** (3.850) |
| Dummy(salary) | 0.168 (0.736) | -0.151 (-1.371) | 0.256*** (2.967) | 0.214*** (3.359) |
| Constant | 5.719*** (5.370) | 3.580*** (7.599) | 4.415*** (10.593) | 3.025*** (10.566) |
| N | 503 | 662 | 2290 | 1743 |
| r² | 0.379 | 0.514 | 0.393 | 0.538 |
| F | 6.676 | 14.456 | 32.967 | 43.965 |

Table 5.2

| Receive Remittances | Food | | | |
|------------------------|---------------------|---------------------|---------------------|----------------------|
| | Yes | | No | |
| | Low | High | Low | High |
| Income(total) | 0.160*** (3.254) | 0.218*** (5.375) | 0.160*** (7.015) | 0.389*** (12.352) |
| Assets(fixed) | -0.039 (-0.726) | 0.235*** (5.994) | 0.182*** (7.560) | 0.075*** (3.790) |
| Assets(liquid) | 0.135*** (2.975) | -0.003 (-0.081) | 0.094*** (5.083) | 0.075*** (4.209) |
| Dummy(loan) | 0.022 (0.158) | 0.096 (0.904) | 0.195*** (3.182) | 0.062 (1.028) |
| Dummy(business) | 0.603*** (4.194) | 0.473*** (4.375) | 0.445*** (7.607) | 0.243*** (4.099) |
| Dummy(farm) | 0.136 (0.644) | -0.210* (-1.787) | 0.311*** (3.722) | -0.058 (-0.965) |
| Dummy(salary) | 0.127 (0.440) | -0.101 (-0.834) | 0.273*** (2.741) | 0.270*** (4.166) |
| Constant | 5.540*** (4.431) | 4.101*** (7.859) | 3.111*** (2.898) | 3.352*** (11.657) |
| N | 440 | 592 | 2069 | 1582 |
| r² | 0.298 | 0.481 | 0.298 | 0.495 |
| F | 4.118 | 11.505 | 19.990 | 35.014 |

* Composite variable: see Appendix1 for details. t-ratios in parenthesis, coefficients significant at * 10%, ** 5% and ***1%; Yes indicates remittance-receiving group, No indicates households in this group do not receive remittances; Low indicates that households of below-median income level are included in the regression, High.indicates above-median income households are included

Table 5.3

| Receive Remittances Income Level | Education | | | |
|--|-----------------------|---------------------|----------------------|-----------------------|
| | Yes | | No | |
| | Low | High | Low | High |
| Income(total) | 1.271*** (3.724) | 0.200 (1.226) | 0.068 (0.397) | 0.558*** (5.657) |
| Assets(fixed) | -0.094 (-0.332) | 0.167 (1.530) | 0.120 (0.870) | 0.080 (1.412) |
| Assets(liquid) | -0.078 (-0.337) | 0.384*** (2.921) | 0.173 (1.204) | 0.356*** (5.600) |
| Dummy(loan) | 0.408 (0.823) | 0.021 (0.056) | -0.246 (-0.746) | -0.133 (-0.659) |
| Dummy(business) | -1.831** (-2.485) | -0.673* (-1.898) | 0.037 (0.102) | -0.293 (-1.461) |
| Dummy(farm) | -3.501** (-2.356) | -0.428 (-0.797) | -1.651** (-2.168) | -0.084 (-0.373) |
| Dummy(salary) | -10.852** (-3.302) | 0.593 (1.264) | -2.246** (-1.996) | -0.584** (-2.321) |
| Constant | 16.321** (3.310) | -2.100 (-1.274) | 4.456** (2.053) | -2.231*** (-2.740) |
| N | 41 | 141 | 135 | 334 |
| r² | 0.953 | 0.652 | 0.580 | 0.563 |
| F | 5.084 | 4.528 | 3.489 | 8.929 |

Table 5.4

| Receive Remittances Income Level | Health | | | |
|--|---------------------|---------------------|----------------------|----------------------|
| | Yes | | No | |
| | Low | High | Low | High |
| Income(total) | 0.177*** (3.032) | 0.195*** (3.432) | 0.208*** (6.354) | 0.347*** (6.864) |
| Assets(fixed) | 0.157** (2.259) | 0.050 (0.935) | 0.171*** (4.723) | 0.160*** (4.979) |
| Assets(liquid) | 0.072 (1.374) | 0.133*** (2.814) | 0.085*** (3.116) | 0.144*** (4.994) |
| Dummy(loan) | -0.052 (-0.320) | 0.109 (0.745) | 0.144* (1.699) | 0.053 (0.546) |
| Dummy(business) | 0.052 (0.323) | -0.058 (-0.398) | 0.112 (1.394) | -0.021 (-0.221) |
| Dummy(farm) | 0.352 (1.547) | 0.041 (0.251) | 0.045 (0.368) | -0.114 (-1.180) |
| Dummy(salary) | -0.185 (-0.606) | -0.295* (-1.724) | -0.131 (-0.959) | 0.182* (1.755) |
| Constant | 1.171 (0.934) | 1.720** (2.372) | -2.630** (-2.139) | -1.064** (-2.294) |
| N | 296 | 435 | 1259 | 1075 |
| r² | 0.353 | 0.445 | 0.184 | 0.441 |
| F | 3.381 | 7.111 | 6.515 | 18.953 |

t-ratios in parenthesis, coefficients significant at * 10%, ** 5% and ***1%; Yes indicates remittance-receiving group, No indicates households in this group do not receive remittances; Low indicates that households of below-median income level are included in the regression, High indicates above-median income households are included

Table 5.5

| Receive Remittances Income Level | General Household Items* | | | |
|--|--------------------------|----------------------|---------------------|----------------------|
| | Yes | | No | |
| | Low | High | Low | High |
| Income(total) | 0.153*** (4.009) | 0.232*** (6.796) | 0.165*** (8.950) | 0.462*** (17.705) |
| Assets(fixed) | 0.032 (0.757) | 0.212*** (6.450) | 0.183*** (9.330) | 0.062*** (3.773) |
| Assets(liquid) | 0.194*** (5.511) | 0.085*** (3.009) | 0.128*** (8.563) | 0.121*** (8.257) |
| Dummy(loan) | 0.022 (0.207) | 0.159* (1.782) | 0.161*** (3.240) | 0.049 (0.971) |
| Dummy(business) | 0.571*** (5.092) | 0.456*** (5.020) | 0.411*** (8.653) | 0.195*** (3.970) |
| Dummy(farm) | 0.182 (1.112) | -0.190* (-1.928) | 0.243*** (3.586) | -0.064 (-1.307) |
| Dummy(salary) | 0.196 (0.889) | -0.132 (-1.306) | 0.272*** (3.367) | 0.219*** (4.085) |
| Constant | 4.370*** (4.620) | 4.549*** (10.384) | 4.602*** (5.263) | 3.384*** (14.209) |
| N | 444 | 592 | 2086 | 1586 |
| r² | 0.375 | 0.556 | 0.384 | 0.606 |
| F | 5.872 | 15.548 | 29.636 | 55.112 |

Table 5.6

| Receive Remittances Income Level | Investment | | |
|--|--------------------|--------------------|---------------------|
| | Yes | No | |
| | High | Low | High |
| Income(total) | 0.327 (0.345) | 0.380* (1.770) | 0.400 (1.588) |
| Assets(fixed) | -0.276 (-0.398) | 0.389 (1.323) | 0.365*** (2.654) |
| Assets(liquid) | 0.451 (0.627) | 0.222 (0.630) | 0.054 (0.390) |
| Dummy(loan) | -0.113 (-0.056) | -0.183 (-0.357) | 0.759* (1.994) |
| Dummy(business) | -0.069 (-0.043) | 1.826** (2.478) | 0.493 (1.250) |
| Dummy(farm) | -3.704 (-0.690) | 1.797 (0.773) | -0.568 (-1.194) |
| Dummy(salary) | -1.284 (-0.692) | -0.665 (-0.938) | -1.325* (-1.780) |
| Constant | 4.583 (0.630) | -6.775 (-1.348) | 1.194 (0.666) |
| N | 30 | 37 | 98 |
| r² | 0.885 | 0.734 | 0.546 |
| F | 1.232 | 2.205 | 2.960 |

* Composite variable: see Appendix I for details. t-ratios in parenthesis, coefficients significant at * 10%, ** 5% and ***1%; Yes indicates remittance-receiving group, No indicates households in this group do not receive remittances; Low indicates that households of below-median income level are included in the regression, High. indicates above-median income households are included. Investment regression for low-income remittance receivers excluded due to lack of observations.

Table 5.7

| Clothing | | | | |
|------------------------|---------------------|---------------------|---------------------|----------------------|
| Receive Remittances | Yes | | No | |
| Income Level | Low | High | Low | High |
| Income(total) | 0.168*** (2.790) | 0.286*** (5.215) | 0.135*** (4.090) | 0.547*** (11.642) |
| Assets(fixed) | 0.047 (0.702) | 0.240*** (4.493) | 0.159*** (4.300) | 0.058** (1.999) |
| Assets(liquid) | 0.229*** (3.965) | 0.125*** (2.693) | 0.134*** (4.758) | 0.134*** (4.994) |
| Dummy(loan) | -0.103 (-0.591) | 0.093 (0.639) | 0.020 (0.222) | -0.077 (-0.858) |
| Dummy(business) | 0.466*** (2.648) | 0.236 (1.637) | 0.361*** (4.400) | 0.101 (1.171) |
| Dummy(farm) | 0.492* (1.858) | -0.104 (-0.632) | 0.025 (0.211) | -0.018 (-0.204) |
| Dummy(salary) | 0.336 (0.971) | -0.205 (-1.235) | 0.213 (1.541) | 0.074 (0.764) |
| Constant | 2.369* (1.780) | 0.488 (0.691) | 3.101** (2.292) | 0.283 (0.665) |
| N | 326 | 494 | 1444 | 1293 |
| r² | 0.341 | 0.359 | 0.173 | 0.307 |
| F | 3.590 | 5.719 | 6.820 | 12.882 |

Table 5.8

| Farm | | | | |
|------------------------|---------------------|---------------------|---------------------|-----------------------|
| Receive Remittances | Yes | | No | |
| Income Level | Low | High | Low | High |
| Income(total) | 0.204*** (3.545) | 0.253*** (4.682) | 0.229*** (8.145) | 0.431*** (9.349) |
| Assets(fixed) | 0.209*** (3.050) | 0.196*** (3.601) | 0.186*** (5.902) | 0.125*** (3.930) |
| Assets(liquid) | 0.241*** (4.276) | 0.083* (1.722) | 0.215*** (8.586) | 0.166*** (6.246) |
| Dummy(loan) | 0.185 (1.179) | -0.132 (-0.964) | 0.282*** (3.797) | -0.052 (-0.616) |
| Dummy(business) | 0.325** (2.088) | 0.226 (1.586) | 0.119* (1.672) | 0.115 (1.332) |
| Dummy(farm) | -0.020 (-0.084) | 0.630*** (3.781) | 0.157 (1.350) | 0.360*** (4.546) |
| Dummy(salary) | 0.073 (0.213) | -0.200 (-1.228) | -0.245* (-1.822) | 0.061 (0.696) |
| Constant | 1.446 (1.144) | 1.142 (1.614) | 1.961** (2.340) | -1.233*** (-2.691) |
| N | 339 | 446 | 1404 | 967 |
| r² | 0.381 | 0.353 | 0.387 | 0.411 |
| F | 4.344 | 4.855 | 19.517 | 14.270 |

t-ratios in parenthesis, coefficients significant at * 10%, ** 5% and ***1%; Yes indicates remittance-receiving group, No indicates households in this group do not receive remittances; Low indicates that households of below-median income level are included in the regression, High.indicates above-median income households are included

Table 5.9

| Receive Remittances Income Level | Fuel | | | |
|--|---------------------|---------------------|---------------------|----------------------|
| | Yes | | No | |
| | Low | High | Low | High |
| Income(total) | 0.069* (1.722) | 0.267*** (6.322) | 0.127*** (5.822) | 0.451*** (12.768) |
| Assets(fixed) | 0.162*** (3.696) | 0.176*** (4.325) | 0.185*** (7.950) | 0.124*** (5.638) |
| Assets(liquid) | 0.104*** (2.764) | 0.068* (1.944) | 0.083*** (4.661) | 0.115*** (5.817) |
| Dummy(loan) | 0.203* (1.843) | 0.094 (0.852) | 0.094 (1.606) | -0.089 (-1.310) |
| Dummy(business) | 0.078 (0.695) | 0.245** (2.208) | 0.217*** (3.890) | 0.213*** (3.217) |
| Dummy(farm) | 0.339* (1.904) | -0.132 (-1.067) | 0.184** (2.247) | -0.139** (-2.071) |
| Dummy(salary) | -0.411* (-1.701) | -0.120 (-0.952) | 0.153 (1.592) | 0.047 (0.647) |
| Constant | 0.446 (0.483) | 1.927*** (3.597) | 1.394** (1.966) | 0.560* (1.757) |
| N | 384 | 555 | 1813 | 1458 |
| r2 | 0.359 | 0.547 | 0.255 | 0.587 |
| F | 4.682 | 13.985 | 14.102 | 46.741 |

t-ratios in parenthesis, coefficients significant at * 10%, ** 5% and ***1%; Yes indicates remittance-receiving group, No indicates households n this group do not receive remittances; Low indicates that households of below-median income level are included in the regression, High.indicates above-median income households are included

Table 6

| Dependent_Variable: Total Consumption | | | |
|--|-----------------------|-----------------------|----------------------|
| Credit Status | pooled | no loan | loan |
| Income(total) | 0.232*** (20.824) | 0.240*** (19.116) | 0.200*** (8.148) |
| Assets(fixed) | 0.133*** (11.150) | 0.127*** (9.557) | 0.164*** (6.100) |
| Assets(liquid) | 0.136*** (13.754) | 0.133*** (12.183) | 0.149*** (6.155) |
| Dummy(loan) | 0.176*** (5.284) | | |
| Dummy(business) | 0.302*** (9.437) | 0.296*** (8.110) | 0.319*** (4.681) |
| Dummy(farm) | 0.205*** (6.297) | 0.241*** (6.630) | 0.043 (0.577) |
| Dummy(salary) | 0.148*** (3.778) | 0.158*** (3.602) | 0.125 (1.389) |
| Dummy(remittances) | -0.102*** (-3.282) | -0.093*** (-2.641) | -0.118* (-1.739) |
| Acres of Land Owned | -0.008 (-0.858) | -0.012 (-1.204) | 0.005 (0.251) |
| Age: 26-45 | 0.010 (0.256) | 0.009 (0.214) | -0.008 (-0.088) |
| Age: 46-65 | 0.006 (0.134) | -0.012 (-0.235) | 0.025 (0.237) |
| Age: >65 | 0.005 (0.085) | 0.007 (0.105) | -0.034 (-0.272) |
| Dummy(male head) | 0.042 (1.100) | 0.041 (0.950) | 0.023 (0.263) |
| Dummy(agriculture) | 0.020 (0.760) | 0.023 (0.789) | 0.005 (0.079) |
| Dummy(married) | -0.040 (-1.021) | -0.014 (-0.318) | -0.134 (-1.538) |
| Number of Children | -0.016 (-0.997) | -0.009 (-0.501) | -0.044 (-1.211) |
| Household Size | 0.007 (0.604) | -0.002 (-0.123) | 0.050* (1.787) |
| Education | 0.013 (1.536) | 0.012 (1.315) | 0.011 (0.579) |
| Constant | 4.720*** (28.963) | 4.854*** (26.481) | 4.336*** (11.992) |
| N | 5863 | 4722 | 1141 |
| r² | 0.483 | 0.494 | 0.465 |
| F | 118.280 | 101.395 | 22.153 |

t-ratios in parenthesis, coefficients significant at * 10%, ** 5% and ***1%

References

- Adams, R.H. (1991), "The Economic Uses and Impact of International Remittances in Rural Egypt", *Economic Development and Cultural Change*, Vol.39, pp.695-722.
- Adams, R.H. (2002), "Precautionary Saving from Different Sources of Income: Evidence from Rural Pakistan", World Bank Discussion Paper.
- Adams, R.H. (2005), "Remittances, Household Expenditure and Investment in Guatemala", World Bank *Policy Research Working Paper* No.3532.
- Ainslie, G. (1975), "Special reward: A behavioural theory of impulsiveness and impulse control", *Psychological Bulletin*, Vol.82, No.4, pp.463-496.
- Alderman, H. and C.Paxson (1992), "Do the Poor Insure? A Synthesis of the Literature on Risk and Consumption in Developing Countries", World Bank *Policy Research Working Papers*, WPS 1008.
- Anderson, C. and N. Nevitte (2006), "Teach your children well: Values of thrift and saving", *Journal of Economic Psychology*, Vol.27, pp.247-261.
- Angeletos, G.-M., D. Laibson, A. Repetto, J. Tobacman, and S. Weinberg, (2001), "The Hyperbolic Consumption Model: Calibration, Simulation, and Empirical Evaluation", *Journal of Economic Perspectives*, Vol.15, No.3, pp.47-68.
- Brambor, T., W.R. Clark and M. Golder (2006), "Understanding Interaction Models: Improving Empirical Analyses", *Political Analysis*, No.14, pp.63-82.
- Brocas, I., J.D. Carrillo and M. Dewatripont (2004), "Commitment Devices under Self-control Problems: An Overview" in *The Psychology of Economic Decisions, Volume 2: Reasons and Choices*, Brocas, I. and J.D. Carrillo (eds), Oxford University Press, Oxford, United Kingdom, 2004.
- Chami, R., C. Fullenkamp, and S. Jahjah, (2005), "Are Immigrant Remittances Flows a Source of Capital for Development?", *IMF Staff Papers*, Vol.52.
- Chipeta, C. and W.Kachaka (2005), "Role of Migrants' Remittances in an unstable Low-income Economy: A Case Study of Malawi", University of Malawi, *Chancellor College Working Paper* No.2005/05.
- Colloredo-Mansfeld, R. (2005), "Consumption", in *A Handbook of Economic Anthropology*, Carrier, J. (ed), Cheltenham, United Kingdom, 2005.
- Cox Edwards, A. and M. Ureta, (2003), "International migration, remittances, and schooling: evidence from El Salvador", *Journal of Development Economics*, 72, pp. 429-461.
- Gammeltoft (2002), "Remittances and Other Financial Flows to Developing Countries", *International Migration*, Vol.40, No.5, pp.181-211.
- Hart, K. (2005), "Money: one anthropologist's view" in *A Handbook of Economic Anthropology*, Carrier, J. (ed) Cheltenham, United Kingdom, 2005.

- Hayashi, F. "Test for Liquidity Constraints: A critical Survey and some new Observations", in *Advances in Econometrics*, Bewley, T. (ed), Cambridge University Press, Cambridge, 1987.
- Ishikawa, T. and K. Ueda, (1984), "The Bonus Payment System and Japanese Personal Savings" in Aoki, M., ed. *The Economic Analysis of the Japanese Firm*. Amsterdam: North Holland.
- Karlsson, N. (2003), "Consumer Self-Control Strategies: An Empirical Study of Their Structure and Determinants", *Journal of Consumer Policy*, Vol.26, pp.23-41.
- Levin, L. (1998), "Are assets fungible? Testing the behavioural theory of lifecycle savings", *Journal of Economic Behaviour and Organisation*, Vol.36, pp. 59-83.
- Lewis, A. and A. Winnett, (1995), "Household accounts, mental accounts, and savings behaviour: Some old economics rediscovered?", *Journal of Economic Psychology*, Vol.16, pp.431-448.
- National Statistical Office (2000), *Poverty Profile in Malawi in 1998*, National Economic Council, Government of Malawi.
- Ratha, D. (2003), "Workers' Remittances: An Important and Stable Source of External Development Finance", in *Remittances, Development Impact and Future Prospects*, Maimbo, S. and Ratha D. (ed.) World Bank Publications, Washington D.C.
- Shefrin, H. and R. Thaler, (1988), "The Behavioural Lifecycle Hypothesis", *Economic Inquiry*, Vol.36, pp.606-643.
- Udry, C. (1990), "Credit Markets in Northern Nigeria: Credit as Insurance in a Rural Economy", *World Bank Economic Review*, Vol.4, pp.251-269.
- Zeldes, S.P. (1989), "Consumption and Liquidity Constraints: An Empirical Investigation", *Journal of Political Economy*, Vol.97, pp.305-346.